

Creating Sustainable Alternatives to Drainage from the Quill Lakes Basin and Loss of Wetlands in Saskatchewan

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Regina Beach

10:00 am, July 29, 2018

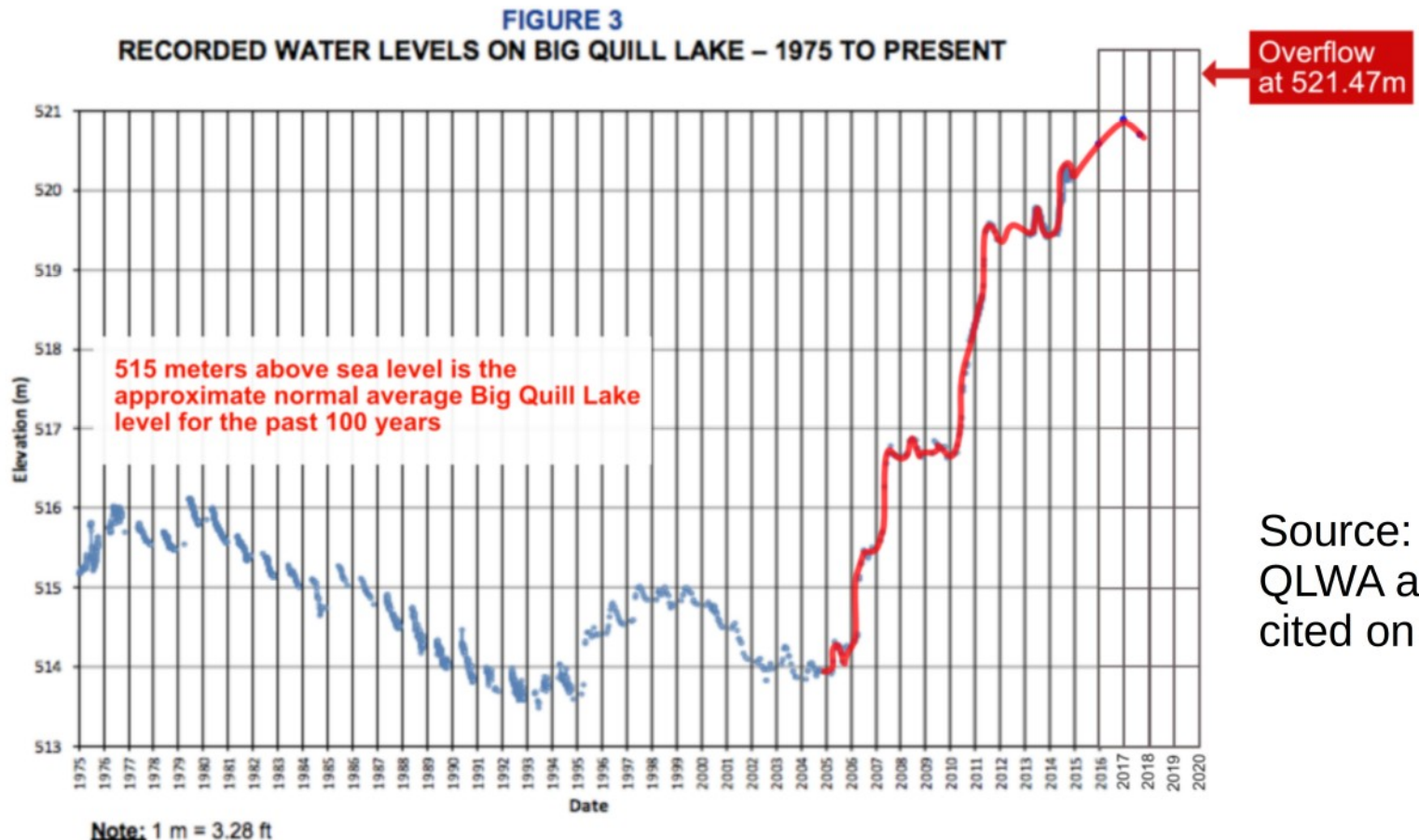


RCE

SASKATCHEWAN

Quill Lakes and Potential Overflow

Quill Lakes: a saline lake; + 7 m water level over 13 years (QLWA); currently 60 cm below overflow at 521.47m (down 40 cm from last year; WSA)



Source:
QLWA and as
cited on chart

This Chart was sourced from page 10 of the Quill Lakes Flood Mitigation Study, Concept Design Report completed for the Saskatchewan Water Security Agency (November 2016 KGS 15-0673-009). Added to the chart were 2015, 2016, and 2017 to the original Figure 3 Graph, as those years were not available at time of print. Also added was the starting point of the Quill Lakes flood in 2005, at approximately 514 M, and shown the approximately 7 meter rise at the high point in the spring of 2017.

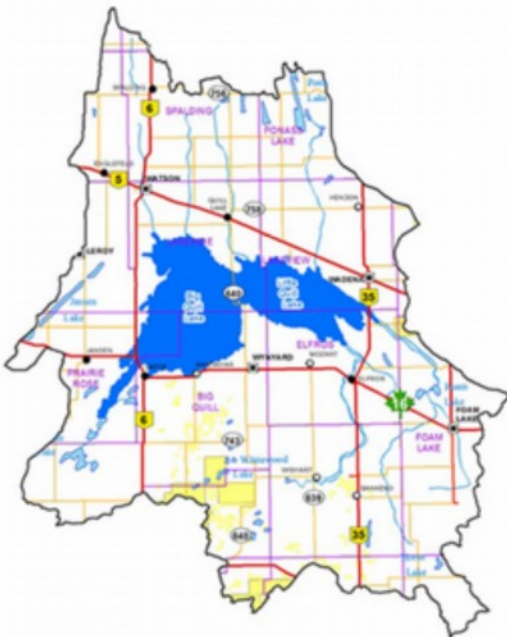
Causes of Growth in the Quill Lakes

- Extreme rainfall events (starting in 2005)
- Higher humidity levels reducing evaporation
- Upstream drainage and loss of wetlands
- No natural outlet (a closed basin)



Illegal
Drainage

Quill Lakes



Images
from
[cbc.ca/
news](http://cbc.ca/news)

Proposed Solution: Common Ground Drainage Diversion Project

- **Proposal put forward by Quill Lakes Watershed Association (QLWA)**, a Conservation and Development (C&D) authority
- Proposal to construct a **25 km drainage diversion channel** redirecting surface water from Kutawagan Lake and Pel Lake towards Last Mountain Lake
- Estimated diversion of **7,000,000 m³ of surface water/year**
- Goal to **lower Quill Lakes by 0.6 metres**
 - See Ministry of Environment EASB File # 2017-014 (Sept. 8, 2017)

Initial Questions Related to Proposed Drainage Project

Environmental

- What effects would there be moving water between watersheds (Quill Lakes Basin and Qu'Appelle River Watershed)?
- What impacts would there be on the *Last Mountain Lake Migratory Bird Sanctuary* (oldest in N. America) and *National Wildlife Area* at the North end of Last Mountain Lake?
- What impact might there be on fish habitats and aquatic plant life through the introduction of water with higher salt content and higher total dissolved solids from Kutawagan and Pel Lakes?
- Is the proposed amount being diverted sufficient to reach the stated goal of a 0.6 m reduction of the Quill Lakes?

Initial Questions Related to Proposed Drainage Project

Economic

- What economic impacts might there be on those downstream due to diminished water quality (e.g. recreation, fishing, drinking water)?
- How would solution resolve economic injuries already done to farmers downstream within Quill Lakes basin from illegal drainage upstream? Would it “solve” the problem of illegal drainage simply by more drainage?
- How would citizens be compensated for loss of Crown water and/or degraded water?
- How would the movement of water affect resilience to predicted droughts under climate change (e.g. summer of 2017)?
- What alternative water management models and productive uses were considered?

Initial Questions Related to Proposed Drainage Project

Social

- Would the QLWA be an appropriate governance structure (where it excludes membership of those downstream affected by water movement)? How could it *impartially monitor* and regulate the water flow?
- How would this new drainage route affect the closing of existing Illegal drainage structures in the Quill Lakes basin (or would it allow licensing)?
- What impact might there be on Treaty Rights of First Nations communities downstream?

Ministry of Environment Indicates there will be No Environmental Assessment (Sept. 8, 2017)

Ministry determined “the project does not meet the criteria of section 2(d) of *The Environmental Assessment Act* (the Act) and, therefore, is **not** a “development” that is required to undergo an Environmental Impact Assessment (EIA)”

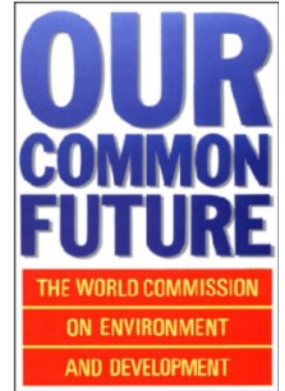
Implications of lack of EIA:

- Diversion proposal **not needing to be made public**
- **No space for public input** (including scholarly input) nor consultation with First Nations
- **No requirement to justify project as most appropriate solution** (opportunity costs)

Errors in Ministry's Determination under Section 2(d) of the Saskatchewan *Environmental Assessment Act*

- **section ii:** failed to acknowledge all surface ***water as a provincial resource*** under the provincial *Water Security Agency Act* (Sec. 38(1)) and potential for degradation of large volumes of freshwater
- **section iv: *failure to acknowledge documented widespread public concern*** downstream (including specific letter from Calling Lakes Ecomuseum from June 15, 2017, to Minister stating Need for Inclusive and Accountable Institution Building)
- **section vi: a *failure to acknowledge potentially significant adverse impacts on the environment***

Integrating Environment and Development: The Lens of Sustainable Development (SD)



- What is sustainable development (SD)?
 - “*development that meets the needs of the present without compromising the ability of future generations to meet their own needs*”
 - World Commission on Environment and Development *Our Common Future* (1987), p. 43
 - “Living on the planet as if we intended to stay”
 - “Enough, For All, Forever”
- SD a central goal of the U.N., World Bank, businesses, governments, global and local non-governmental organizations



SUSTAINABLE DEVELOPMENT GOALS

1 NO POVERTY



2 ZERO HUNGER



3 GOOD HEALTH AND WELL-BEING



4 QUALITY EDUCATION



5 GENDER EQUALITY



6 CLEAN WATER AND SANITATION



7 AFFORDABLE AND CLEAN ENERGY



8 DECENT WORK AND ECONOMIC GROWTH



9 INDUSTRY, INNOVATION AND INFRASTRUCTURE



10 REDUCED INEQUALITIES



11 SUSTAINABLE CITIES AND COMMUNITIES



12 RESPONSIBLE CONSUMPTION AND PRODUCTION



13 CLIMATE ACTION



14 LIFE BELOW WATER



15 LIFE ON LAND



16 PEACE, JUSTICE AND STRONG INSTITUTIONS



17 PARTNERSHIPS FOR THE GOALS



SUSTAINABLE DEVELOPMENT GOALS

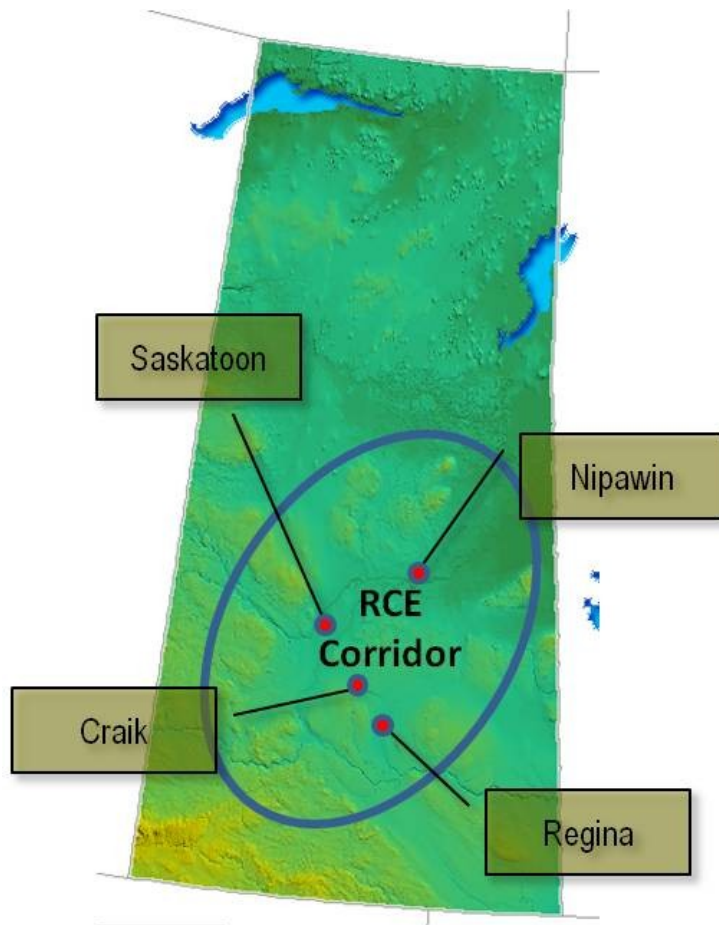
Education for Sustainable Development (ESD): Business School in Curitiba, Brazil



Regional Centres of Expertise (RCE) on Education for Sustainable Development (ESD)



RCE Saskatchewan (2007 to Present)



RCE SK Partners:

U of S and U of R

SK Polytechnic

First Nations University

Luther College, Campion
College, & Regional
Colleges

Towns and Cities

Professional Organizations
& NGOs

RCE Saskatchewan

Thematic Issue Areas:

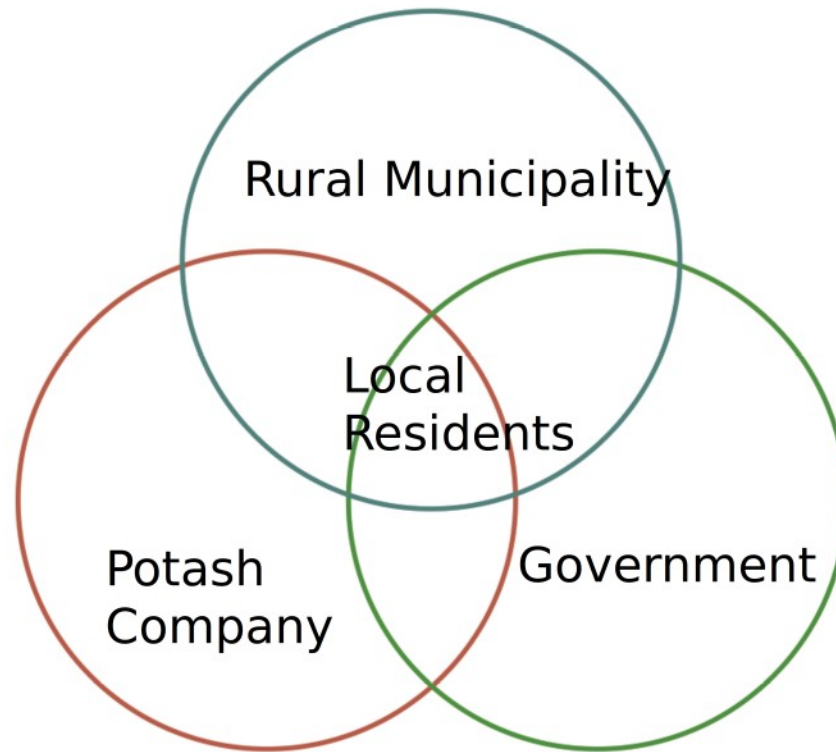


- Building Sustainable Communities
- Climate Change
- Health and Healthy Lifestyles
- Farming and Local Food Production, Consumption, and Waste Minimization
- K-12 Education for SD
- Reconnecting to Natural Prairie Ecosystems
- Adapting Cultures for Sustainability
- Sustainable Infrastructure including Water and Energy
- Youth

RCE Collaboration in North, Central, and South America



Working with Local Communities: Yancoal Potash Mine Proposal



Video



Formal RCE SK Submissions

Sustainable Community



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SASKATCHEWAN
REGIONAL CENTRE
OF EXPERTISE
ON EDUCATION
FOR SUSTAINABLE
DEVELOPMENT



Timeline of RCE Saskatchewan Strategic Interventions and Quill Lakes

- RCE Letter for **Water Management Roundtable** (Oct. 10, 2017)
- Pasqua First Nations **announces intention for Judicial Review** of lack of Provincial Environmental assessment (Nov. 2, 2017); applies for review in December
 - **Pipe Ceremony with Elders for the Water** (Nov. 6 at Treaty 4 Governance Centre in Fort Qu'Appelle)
- RCE Requests **Canadian Government Environmental Assessment** (Nov. 19, 2017) and Federal Request for Input (Nov. 24, 2017)
 - **RCE Cites Relevant SDGs** (#2, 4, 6, 9, 12, 14, 15, 16, 17)
- **Save Last Mountain/Qu'Appelle Lakes/SAWS Incorporates** (Nov. 24, 2017)
 - **Petition** for Provincial EIA and document release (Nov. 25, 2017)



November 19, 2017

The Honourable Catherine McKenna
Minister of Environment and Climate Change
House of Commons Ottawa, Ontario Canada
K1A 0A6

Dear Minister McKenna,

RCE Saskatchewan is a Regional Centre of Expertise (RCE) on Education for Sustainable Development (ESD) acknowledged by the UN University in 2007. Our RCE brings together



Timeline of RCE Saskatchewan Strategic Interventions

- RCE Saskatchewan presents on Quill Lakes Diversion Project at **1st Global RCE Thematic Conference** in Okayama, Japan (December 5-7, 2017)
- 25 RCEs, UN University, UN Agencies (UNEP, UNESCO), and International Association of Universities (IAU) Present
- Focus on issues of *Sustainable Consumption and Production* (SDG #12)



Potential Environmental Impacts with Drainage

- Kutawagan Lake (4000-5000 Total Dissolved Solids (TDS)) and Pel Lake have a **much higher salt content** than Last Mountain Lake (1400-1800 TDS)
- Introducing a **new source of farm run-off** (manure, fertilizer, pesticides, herbicides) into Last Mountain Lake from a large area
 - Should seek to provide greater (vs. less) protection to Last Mountain Lake's water quality
- **Zooplankton** (a major source of food for fish) are **especially sensitive to TDS**
- **Perch and Northern Pike sensitive to higher salinity** that the proposed diversion would likely cause
- **Need to model impacts on macroinvertebrates and the food web**

Potential Environmental Impacts with Proposed Drainage

- Introducing higher TDS water having a **cumulatively increasing impact** on the quality of the lake water over time
 - Esp. if the salinity of the lake inflow is higher than the lake outflow
- May impact some areas more than others
 - **saline water has a tendency to concentrate** in certain areas (vs. mixing evenly)
 - **accumulation of higher density saline water in lake bottom** displacing species such as burbot and lake whitefish
- Other **potential pollutants such as ammonia and chlorides** (not known with lack of Environmental Impact Assessment)
- *Precautionary Principle: **Why incur potential environmental risks when alternatives available where risks known (for example, closing illegal drainage in the Quill Lakes)?***

Key RCE Concerns: Diversion Project Insufficient to Meet Stated Goals

- Common Ground Drainage Diversion Project diversion of 7,000,000 m³ of surface water insufficient to meet stated goal of lower Quill Lakes by 60 cm
- The KGS 2016 study (p. 85) showed Kutawagan Creek diversion of 27,000,000m³/year led to only a 2 cm reduction/year in Quill Lakes—a minor reduction
- Implies 7,000,000 m³/year diversion only reduces Quill Lakes **by a mere 0.52 cm/year**

Why Construct Project if not Meeting Goal?

Possible Political Rationales

- Break project into 4 phases to **avoid Federal Environmental Impact Assessment legislation** triggered at 10,000,000 m³/year? (CEAA 2012)
- **Create an “adequate outlet”** for water discharge from the Quill Lakes Basin?
 - **required under provincial legislation to enable licensing of existing illegal drainage projects** and new drainage projects
 - deliberate goal to **put more land into production** (despite serious tradeoffs & existing laws) to gain farm votes and tax revenue
- Create a channel that could be **used with extreme flooding events?**
 - **City of Regina allowed to send waste water down Qu’Appelle River** by enacting emergency provision of WSA permit in August, 2015, vs. Regina internalizing costs

Value of Closing Illegal Drainage in Qu'Appelle Basin

- 38% of the Quill Lakes' current average inflow is due to illegal drainage (KGS. 2016. p. 77, Table 11)
 - Clear substantive reduction in Quill Lakes if close illegal drainage
- Saskatchewan Ministry of Environment's media release of July 14, 2016 committed itself to closing unapproved drainage works into the Quill Lakes Area
 - Little to no action taken since date (though possible action by WSA in near future)

Value of Restoring and Protecting Wetlands

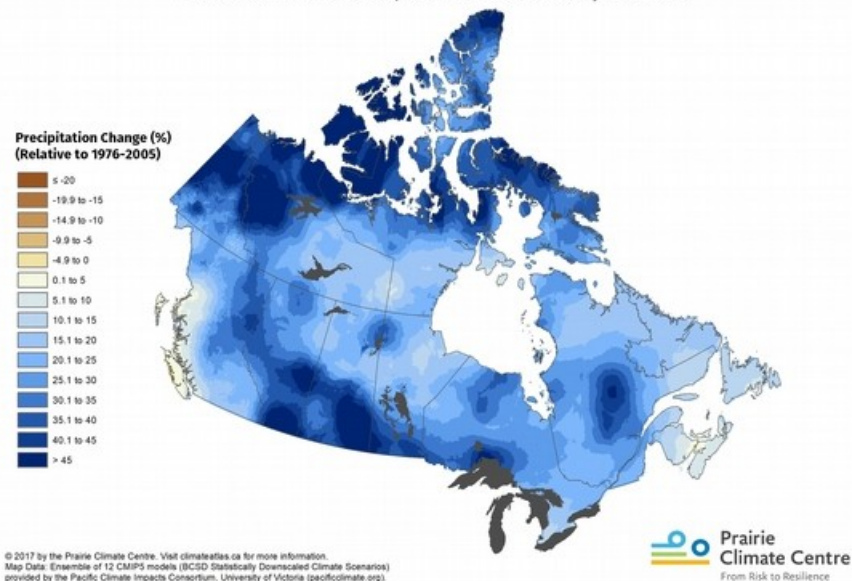
- Carbon sequestration
- Wildlife habitat
- Groundwater replenishment
- Water purification
- Flood prevention
- Water storage (& climate change)
- Innovations in production
collaborating with nature

Feed the World: Move from Water Drainage to Water Storage, Management, and Use

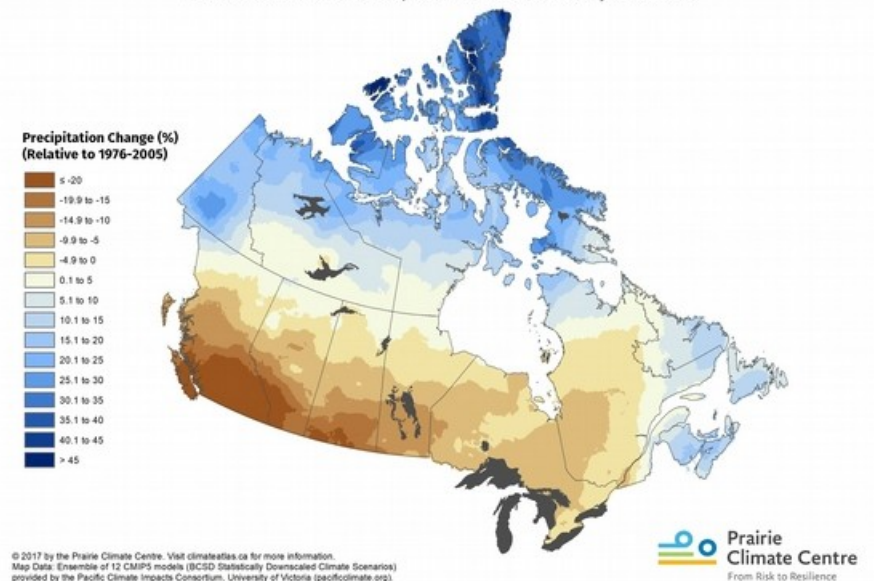
- Drainage solutions fail to see the value of fresh water for other uses (both agricultural and non-agricultural)
- Need to move from drainage to storage, especially with climate variability
- Should explore how surplus water can be used for other types of crops (ex., fruits and vegetables) or used for local irrigation in dry periods

Need For Better Water Management with Climate Change: Projected Changes in Precipitation for months of April and August

2051-2080 Projected Change in Total Precipitation: April
Under the RCP8.5 scenario, relative to a baseline of 1976-2005



2051-2080 Projected Change in Total Precipitation: August
Under the RCP8.5 scenario, relative to a baseline of 1976-2005



Prairie Climate Centre (Oct 19, 2017) with map data from
the University of Victoria *Pacific Climates Consortium*

Feed the World: Brazil Experimental Farm with 7 Kinds of Plants Planted Together (Syntropy vs. Monoculture)



Feed the World: Precision Agriculture and Wetlands

- Robotic agriculture allows for precision farming at small scales
 - See Indiana's *AgBot Challenge*
- Need to explore the ability of new technologies/robotic technologies to allow for new types of crops as well as more labour intensive planting and harvesting
- Need to explore synergies between this type of planting alongside existing wetlands taking into account seasonal variability

Avenues for Halting Illegal Drainage

- Employ **satellite imagery** of area and send legal warnings where illegal drainage detected
- Allow **rural enforcement** of illegal drainage by conservation authorities and others (RCMP)
- **Prevent SaskPower and SaskEnergy line marking** where no WSA drainage permit or aqua permit
- Require banks & credit unions to **register illegal drainage on properties** as legal liabilities (akin to property liens or toxic sites on land) until remedied
- Develop **consistent wetland policy for all industries** with corporate farming treated the same as oil & gas and mining; no net loss of wetlands (2X, 3X restoration)

Avenues for Halting Illegal Drainage

- **Regulate sale of tile for drainage** (require drainage permits for sale) and monitor activities of drainage consultants
- Independently review and **invalidate contracts of land rentals not respecting existing wetlands**
- **Require drainage laws be universally enforced by courts** (rule of law) vs. only when complaints
- **Show alternative land uses working with wetlands**

Recent Timeline of Common Ground Channel Diversion Project

- **Common Ground Channel Diversion Project withdrawn** (January, 2018) after emails showing inappropriately cozy relationship between QLWA and Government
- **Canadian Environmental Assessment Agency** indicates it is **no longer deciding whether to conduct a federal EIA** (January 23, 2018)
- **Pasqua First Nations reaches out of court settlement** with Gov't of SK requiring “enhanced engagement process” re. drainage plans (May 18, 2018)
- **WSA meets with SAWS** from direction of Minister Dustin Duncan (June 1, 2018)
- **Wetland Roundtable organized in Saskatoon** by concerned organizations and volunteers (June 6-7, 2018)
- **Release of Provincial Auditor of Saskatchewan 2018 Report-Volume 1:** “Ch. 12: Water Security Agency—Regulating Drainage” (June 7, 2018)

SK Alliance for Water Sustainability (SAWS) Wins Recognition Award at 10th RCE ESD Recognition Event (May 2, 2018)



Why Still a Concern?

- *Agricultural Water Management Strategy* wants to license most existing illegal drainage through networks (vs. closure)
 - Value of wetlands and many downstream impacts not considered adequately in strategy
- Need a *Sustainable Watersheds/Wetlands Act*
 - A *Sustainable Watersheds Act* just passed by Manitoba: fines for illegal drainage (\$10,000 to \$500,000) and protection for class 3, 4, and 5 wetlands
- Need to look at non-point cumulative impacts
- Need to challenge view there has to be a tradeoff between economy and environment and community